

## REMARKS / ARGUMENTS

### **I. General Remarks**

Please consider the application in view of the following remarks. Applicants thank the Examiner for his careful consideration of this application, including the references that Applicants have submitted in this case.

### **II. Disposition of Claims**

Claims 1-13, 15-41 and 63-66 are pending in this application. Claims 14, 42-62, and 67-88 were cancelled in a previous response.

Claims 20, 23, 24, 27, 28, 33, 34, 36, 37, 40, and 41 have been amended herein. These amendments are supported by the specification as filed. None of these amendments were made for reasons relating to patentability.

Claims 1-13, 15-41, and 63-66 stand rejected under 35 U.S.C. § 103(a).

### **III. Remarks Regarding Restriction Requirement**

On June 1, 2006, during a telephone conversation with the Examiner, claims 1-41 and 63-66 were provisionally elected in response to the Examiner's restriction requirement. The provisional election of claims 1-41 and 63-66 is hereby confirmed and claims 42-62 and 67-88 were cancelled in the Amendment and RCE filed on September 6, 2006. Applicants reserve the right to present the cancelled claims in one or more continuing applications.

### **IV. Remarks Regarding Rejections of Claims**

#### **A. Rejections of Claims 1-9, 11-13, 15-41, 63, 65, and 66**

Claims 1-9, 11-13, 15-41, 63, 65, and 66 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,990,050 to Patel ("Patel") in view of a reference entitled "Amphiphilic Copolymers," from *Langmuir* (1998) by P. Perrin ("Perrin"). With respect to these rejections, the Office Action states:

Patel discloses a drilling/working fluid, to be use in a subterranean formation, having an invert emulsion fluid that includes an oleaginous fluid (continuous phase) having an oil and an oil-soluble glycol ether that can be miscible in oil but only 10% miscible in water, a non-oleaginous fluid, and an emulsifier to stabilize the invert emulsion. (Abstract; col. 2, lines 17-42; col. 3, lines 12-21; col. 4, lines 8-24; col. 12, lines 2-65; col. 13, line 1 to col. 14, line 14) Patel discloses that the non-oleaginous fluid can be deionized water, fresh water, seawater and/or organic/inorganic brines and that it is present in an amount of from about 1 to 70%

by volume of the total invert-emulsion volume. (Col. 4, lines 24-40)

Patel discloses the drilling fluid to further contain wetting agents or emulsifiers, such as crude tall oil, oxidized crude tall oil, alkyl aromatic sulfates and sulfonates; organophilic clay; an oil-soluble polymer or a polyamide resin as a viscosifier; weighting agents; fluid loss control agents; and corrosion inhibitors, such as silicates. (Col. 5, lines 1-15 and 22-63) Patel lists a series of emulsifiers (e.g. VERSACOAT®) followed by an alternate, separate list of surfactants, which can be instead used to produce or stabilize the invert-emulsion. Thus, Patel does not require that the invert-emulsion contain a surfactant. (Col. 5, lines 15-22; See, e.g., Example 1, wherein Patel discloses an example of the emulsion containing a glycol ether, organophilic clay, VERSACOAT® emulsifier, a silicone emulsifier, lime, barite and a calcium chloride brine)

However, Patel does not disclose the emulsifier to be a solid, polymeric emulsifier nor does Patel disclose the particle size of the emulsifier.

Perrin teaches the use of a non-toxic, polymeric emulsifier to produce a rapid formation of a crystalline array of micrometer oil cells surrounded by a thin layer of aqueous polymer solution using a simple shear in-situ emulsification procedure. (Abstract).

Perrin also teaches the polymeric emulsifier to be a hydrophobically-modified poly(sodium acrylate) having hydrophobic alkyl chains grafted onto a negatively charged backbone (solid) and that its molecular weight of 50,000 g/mol. The amount of polymer required to stabilize the emulsion is 4% by volume and the cells produced by the emulsion have a diameter of 3  $\mu$ m. (Pages 5977-78)

Perrin further teaches that using the amphiphilic polymer to form the emulsion provides for a more uniform monodisperse emulsion having enhanced stability due to, inter alia, their exceptional resistance to film breaking. (Pages 5978-79)

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time that the invention was made, to use Perrin's solid amphiphilic polymer as the emulsifier in the invert-emulsion used in Patel's method of drilling/treating a subterranean formation. It would have been obvious to one skilled in the art to use said amphiphilic polymer in Patel's drilling fluid in order to incorporate Perrin's teachings and attain a more uniform and stable

emulsion and, thus, a more efficient and cost-effective method of drilling/treating a formation.

Although Patel does not specifically disclose contact angles for the various emulsion phases (claims 14-17), because the emulsion disclosed by Patel and that encompassed by the instant claims are the same, then both emulsions must inherently possess the same physical properties, such as contact angle.

(Office Action at 5-7.) Applicants respectfully disagree with these rejections.

To form a basis for a § 103(a) rejection, a combination of prior art references must teach or suggest each element in the claim. MANUAL OF PATENT EXAMINING PROCEDURE (“MPEP”) § 2142 (2006). The prior art must also suggest the combination of the prior art to produce the claimed invention. *Id.* at § 2143.01. The combination of *Patel* and *Perrin* does not teach or suggest each element of Applicants’ claims, nor does it suggest a combination of *Patel* and *Perrin* that would produce the inventions recited in Applicants’ claims.

First, neither *Patel* nor *Perrin* teaches the use of solid emulsion facilitating particles, as recited in claims 1, 29, and 63. The Office Action apparently relies on *Perrin*’s description of “a hydrophobically-modified poly(sodium acrylate) having hydrophobic alkyl chains grafted onto a negatively charged backbone” as teaching solid emulsion facilitating particles. (See Office Action at 6.) However, this description in *Perrin* refers only to the compound’s molecular structure, and says nothing about the state of matter in which it exists. Neither this description nor anything else in *Perrin* teaches a solid emulsion facilitating particle, as recited in Applicants’ claims.

Next, neither *Patel* nor *Perrin* teaches emulsion facilitating particles have a fluid contact angle from about 70° to about 140°. The Office Action admits that *Patel* does not specify this element, but simply asserts that *Patel* teaches it because the emulsions disclosed in *Patel* are encompassed by Applicants’ claims, and thus “must inherently possess the same physical properties, such as contact angle.” (Office Action at 7.) Applicants respectfully disagree. Claims 1, 29, and 63 specify that the emulsions encompassed by Applicants’ claims must comprise solid particles having a fluid contact angle from about 70° to about 140°. However, as the Examiner acknowledges, *Patel* does not disclose any solid particle that could have a contact angle. Because of this admitted difference in composition, the emulsions disclosed in *Patel* is not necessarily associated with a contact angle of from about 70° to about 140°. See MPEP at

§ 2112 (“To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference ....’”). Nor does *Perrin* supply this teaching. As discussed above, *Perrin* also does not teach emulsions that comprise solid emulsion facilitating particles, much less particles having a contact angle of from about 70° to about 140°. Moreover, like *Patel*, *Perrin* contains no indication of any particular contact angle associated with the emulsions disclosed therein.

Finally, no permissible combination of *Patel* with *Perrin* can be used to produce a “surfactant-free” emulsion, as claims 1, 29, and 63 recite. Despite the Office Action’s assertion that *Patel* does not require that the invert emulsions therein include a surfactant, the embodiments in *Patel* to which the Office Action cites include surfactants. The VERSACOAT® emulsifier in Example 1 upon which the Examiner relies, as well as the other mentioned emulsifier products VERSAWET® and NOVAMUL® (see *Patel* at col. 5, ll. 16-19) are surfactants. See VERSACOAT® Product Bulletin, M-I SWACO (2007) (describing product as an “organic surfactant”); VERSAWET® Product Bulletin, M-I SWACO (2007) (same); U.S. Patent No. 6,218,342 to *Patel*, col. 9, l. 59. (Copies of the cited product bulletins are submitted with this response.) The fact that *Patel* does not refer to these products as “surfactants” does not mean that they are not surfactants, or that the fluids including them are “surfactant-free.” Moreover, even if *Patel* does teach a “surfactant-free” emulsion, the hydrophobically-modified poly(sodium acrylate) from *Perrin* that the Office Action combines with *Patel* is itself a polymeric surfactant, as *Perrin* explicitly acknowledges. (See *Perrin* at 5977.) To modify that combination to produce a “surfactant-free” emulsion would change the fundamental principle of *Perrin* that a surfactant is used to stabilize the emulsions discussed therein. See MPEP at § 2143.01 (“If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.”) Thus, the combination of *Patel* with a surfactant taught in *Perrin* cannot obviate Applicants’ claims.

Because the combination of *Patel* and *Perrin* does not teach or suggest the inventions recited in claims 1, 29, and 63, and because the combination of *Patel* and *Perrin* would not produce the inventions recited in Applicants’ claims, that combination of references cannot obviate these claims. Moreover, since “a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers,” and since claims 2-9,

11-28, 30-41, 65, and 66 depend, either directly or indirectly, from independent claim 1, 29, or 63, these dependent claims are allowable for at least the same reasons. *See* 35 U.S.C. § 112 ¶ 4 (2004). Accordingly, Applicants respectfully request the withdrawal of these rejections.

**B Rejections of Claims 10 and 64**

Claims 10 and 64 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Patel* in view of *Perrin* as discussed above, and further in view of a reference entitled “Crude Oil Emulsions: A State of the Art Review,” SPE 77497 by Sunil Kokal (“*Kokal*”). With respect to these rejections, the Office Action states:

Patel and Perrin were discussed above. Patel and Perrin do not expressly teach adding a breaker to the drilling fluid.

However, Kokal teaches that demulsification is the separation of an emulsion into its component phases to usually provide an aqueous component and an oil-phase component containing the desired hydrocarbon oil. (Page 5) Kokal further teaches that chemical demulsification (“breaking” by adding chemical demulsifiers) is the most common method of emulsion treatment. (Page 6-7)

Accordingly, it would have been obvious to a person of ordinary skill in the art, at the time that the invention was made, to include a breaker step in Patel and Perrin’s method of drilling/treating a subterranean formation comprising subsequently adding a chemical demulsifier to the invert-emulsion. It would have been obvious to one skilled in the art to do so to be able to effectively attain/produce crude oil, with lower amount of water contamination, as taught by Kokal.

(Office Action at 7-8.) Applicants respectfully disagree with these rejections.

To form a basis for a § 103(a) rejection, a combination of prior art references must teach or suggest each element in the claim. MPEP at § 2142. The prior art must also suggest the combination of the prior art to produce the claimed invention. *Id.* at § 2143.01. However, as discussed in Section IV.A. above, the combination of *Patel* and *Perrin* does not teach or suggest each element of claims 1, 29, and 63, nor does it suggest a combination of *Patel* and *Perrin* that would produce the inventions recited in those claims. Since “a claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers,” and since claims 10 and 64 depend, either directly or indirectly, from independent claim 1 or 63, these dependent claims are allowable for at least the same reasons.

See 35 U.S.C. § 112 ¶ 4 (2004). Accordingly, Applicants respectfully request the withdrawal of these rejections.

**V. No Waiver**

All of Applicants' arguments and amendments are without prejudice or disclaimer. Additionally, Applicants have merely discussed example distinctions from the cited references. Other distinctions may exist, and Applicants reserve the right to discuss these additional distinctions in a later Response or on Appeal, if appropriate. By not responding to additional statements made by the Examiner, Applicants do not acquiesce to the Examiner's additional statements. The amendments and example distinctions discussed by Applicants are sufficient to overcome the rejections of the claims.

**SUMMARY AND PETITION FOR A THREE-MONTH EXTENSION OF TIME  
TO FILE THIS RESPONSE**

In light of the above remarks, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections. Applicants further submit that the application is now in condition for allowance, and earnestly solicit timely notice of the same. Should the Examiner have any questions, comments or suggestions in furtherance of the prosecution of this application, the Examiner is invited to contact the attorney of record by telephone, facsimile, or electronic mail.

Applicants hereby petition under the provisions of 37 C.F.R. § 1.136(a) for a three-month extension of time to file this Response, up to and including October 6, 2007.

The Commissioner is hereby authorized to debit Baker Botts L.L.P.'s Deposit Account No. 02-0383, Order Number 063718.0454, in the amount of \$1,050.00 for the fee under 37 C.F.R. § 1.17(a)(3) for the three-month extension of time to file this response. Should the Commissioner deem that any additional fees are due, including any fees for extensions of time, the Commissioner is authorized to debit Baker Botts L.L.P.'s Deposit Account No. 02-0383, Order Number 063718.0454, for any underpayment of fees that may be due in association with this filing.

Respectfully submitted,



Elizabeth L. Durham  
Registration No. 59,509  
BAKER BOTTs L.L.P.  
One Shell Plaza  
910 Louisiana  
Houston, TX 77002  
Telephone: 713.229.2104  
Facsimile: 713.229.7704  
Email: liz.durham@bakerbotts.com

Date: October 5, 2007